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EDGAR M. JOHNSON
Director

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Technical review by

Michael G. Rumsey

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14. ABSTRACT (continued)

Results: (1) Typed transcripts of all interviews were delivered to ARI under separate covers in three volumes. (2) Twenty-nine potential CEVs were derived from the interview transcripts and developed so that each contains a title and a descriptor. The potential CEVs were face-validated in this project and are susceptible of further validation and cross-validation by SMEs. Each potential variable was designed to serve as a contributing variable in composite criteria of combat effectiveness, after being evaluated for validity by SMEs.

Discussion: The potential CEVs derived in this project are deemed to possess face validity, based upon the judgments of three Continental Systems Subject Matter Experts. Here "face validity" means the potential CEVs make sense and, on the surface, seem to be reasonable in a military context. However, before full confidence can be placed in the utility of the CEVs, they need to be validated further.

IDENTIFICATION OF POTENTIAL COMBAT EFFECTIVENESS VARIABLES

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INTRODUCTION

This report describes a project whose purpose was to identify and develop potential individual combat effectiveness variables. The project has its origin in the need for valid criteria to be used in validation of predictors of combat effectiveness. Such criteria must, in some way, relate to combat effectiveness, either directly or secondarily.

Background

Assessments of a global concept of "combat effectiveness" have not proven to be effective. Simply predicting and assessing someone's "combat effectiveness" as a single, global attribute has not been productive. The concept does not work unless it is reduced to a set of criterion elements which are developed into some kind of scales, eg., anchored scales, which can be put together in a battery for accessing actual or potential effectiveness.

The development of such measures appears to be feasible (White, et.al., 1991). However, to be feasible, each measure must be Army-wide, ie., not specific to any MOS or job. Furthermore, the behavior to be covered cannot always be as concrete and specific as might be used solely for non-specific performance variables.

A more feasible approach appears to be development and use of Combat Effectiveness Variables (CEV), which are: *behaviors and attributes of individual soldiers which, taken together, contribute to effectiveness of the individual in combat.*

The ultimate problem is to identify and operationalize attributes, characteristics, and behaviors that can serve as potential CEVs. After identification and operationalization of potential CEVs, they can be validated in later studies and, where valid, can be included as criterion measures of combat effectiveness.

Optional Research Approaches

There are a number of ways of approaching this problem. The traditional technique is to perform one of several types of job function analyses, eg., task analyses, critical incident analyses, or performance characteristics analyses, each of which is progressively more capable of identifying and quantifying skills and abilities. However, all still rely upon expert judgment.

In spite of sophisticated statistical procedures (factor analysis) for reducing these judgments into a readily usable form, these approaches fail to completely overcome the problem of perceptual screening through biased values and beliefs, as well as simple straightforward judgmental error. Any judgment-based approach may reflect reliably observed behavioral outcomes but may also provide little insight into the skills, abilities, or attributes that are causally related to those outcomes.

Research Approach

There are a number of ways of approaching this research problem. The solution selected for this project is based upon the conviction that the best way to identify critical attributes of the effective combat performer is to identify the effective performer, study what he or she actually does on the job that distinguishes him or her from individuals whose performance is less satisfactory, and, thus, identify those behaviors that are responsible for the difference. Thus, this approach involves a study of effective combat performance.

It is a criterion-based approach, which would identify critical skills, behaviors, and competency requirements of the truly effective combat soldier. This is different from a norm-referenced approach, which would identify the knowledges and skills of soldiers possessing, on the average, a lesser degree of competence.

The research procedure best suited to address this problem of identifying a person's general characteristics that are causally related to complex outcomes is the *behavioral event interview*. This technique, developed by McClelland and his colleagues at McBer and Company, is a structured method which focuses upon differences between superior and average job incumbents. Superior and average incumbents are identified in some way and then the behavior of the different groups is compared.

In the project reported here, the behavioral event interview procedure was conducted within the limits of available time and subject availability. Some modifications in the procedure were necessary.

In this project, modified behavioral event interviews were conducted with combat-experienced soldiers. Interviews were recorded and transcribed. Then, intensive content analyses were conducted by three Subject Matter Experts, SMEs (2 military psychologists, 1 experienced Infantry officer retired). The content analysis was devoted to identification of potential combat effectiveness variables.

PROCEDURE

Subjects

A total of 375 Army personnel, all Desert Storm and/or Desert Shield veterans were interviewed.

In July 1991, 40 interviews were conducted with 114 combat-experienced personnel at Fort Stewart, Georgia, and Fort Benning, Georgia. All of these personnel were veterans of Desert Storm.

In October 1992, 261 soldiers deployed in Kuwait were interviewed. 106 interviews were conducted.

In each interview, the number of persons interviewed ranged from one through eight. Numbers of personnel in interview groups varied because personnel were taken for interviews as they were provided by their units.

Subjects came from the following specialties:

- | | |
|----------------------------|-----------------------|
| o Transportation | o Special Forces |
| o Engineers | o Military Police |
| o Motor Pool | o Armored (Tanks) |
| o Bradley Fighting Vehicle | o Mechanized Infantry |
| o Crews | o Scouts |
| o Artillery Support | o Maintenance |
| o Medical | |

Subjects ranged from E-3 to O-7. Ranks were distributed as follows:

Corporal	57	2d Lieutenant	4
Specialist 4	167	1st Lieutenant	8
Sergeant, Specialist 5	51	Captain	8
Staff Sergeant	37	Major	0
Platoon Sergeant	24	Lt. Colonel	3
First Sergeant	7	Colonel	2
Sergeant Major	5	Brigadier General	2

Interviews

Modified, or "loose", "behavioral events" interviews were conducted. Customarily, in "behavioral events" interviews, outstanding or excellent personnel are identified prior to the interview, as are "average" performing personnel. Then, each such classified individual is interviewed intensively to learn how or what activities they perform. Thus, it is possible to learn what performances are attributed to outstanding personnel and what impact the performances exert. Emphasis is upon the outstanding performers and what they do.

- (1) The personnel interviewed could not be as carefully selected, eg., "outstanding" and "average," and the interviews could not be as carefully structured as those customarily used in "behavioral events" projects. Rather, the interviews were conducted when a number of combat-experienced personnel were made available to ARI and the contractor. Accordingly, the personnel were not sampled, they were levied, and levies were not based on any classification such as "outstanding" or "average." The only classification was that the personnel were combat-experienced. Thus, the emphasis shifted in part --from outstanding soldiers to combat-experienced soldiers.
- (2) Most of the interviews were conducted in groups. A total of 375 personnel participated, usually in groups of 8 - 10 personnel. Therefore, traditional "behavioral event" procedures had to be adapted to group contexts, resulting in more loosely structured interviews.
- (3) Because all individuals interviewed were levied rather than being individually selected, it was not possible for the Continental Systems interviewers to discern which individuals, if any, were outstanding combat soldiers or were merely average. Therefore, it was necessary to devise some other procedure for identifying outstanding combat performances.
- (4) Interviewers requested interview subjects to "tell stories about incidents where you felt like you did well or did poorly." Following the self-descriptions, interviewees were requested to describe other people who they felt were outstanding in combat, and to describe their outstanding performances, with examples.

In the interviews reported here, emphasis was, in part, shifted from performer to performance and greater emphasis was placed upon outstanding performances than in ideal behavioral event interviews.

On the other hand, typical "behavioral events" formats were followed within the constraints discussed above. The interviews did not follow "focus group" formats. Rather, as described, in-depth investigative interviews were conducted with both outstanding and average combat soldiers. Interviews were conducted by two Continental Systems employees who were retired Infantry field-grade officers and, thus, familiar with the contexts and problems of combat. One retired officer conducted each interview.

The interviews addressed instances of effective and ineffective performance in combat during Operation Desert Storm, and behaviors and attributes that were deemed to contribute to those performance outcomes. All interviews were audio-tape-recorded.

Reduction of Data

The purpose of the project was to identify *potential* Combat Effectiveness Variables, which possess face validity, and which can be further validated in later project(s) by judgmental ratings of Subject Matter Experts (SME). CEVs are: *behaviors (performances) and attributes of individual soldiers which, taken together, contribute to effectiveness* of the individual in combat. When finally proven valid, CEVs may serve as criteria for validating predictors that have been developed previously.

Thus, it was expected that the interviews would reveal behaviors and attributes relevant to combat effectiveness. To accomplish this purpose, it was necessary to analyze transcripts of the interviews and extract meaningful content from them.

Accordingly, intensive content analyses were conducted by three SMEs (2 military psychologists and one experienced Infantry officer, retired). The analyses were addressed to identification of content items relevant to combat performance.

The procedure was as follows:

- (1) Read the transcripts. Eliminate all irrelevant material, ie., material that does not address incidents, actions, or attributes related to combat activities or combat performance. Approximately 50 percent of interview contents were eliminated in this way. The remainder consisted of "passages" (statements, paragraphs, quotations, discussions) deemed to refer to combat-related performance, attributes, or other aspects. The number of passages was not available at time of revision of this report.

- (2) Analyze each passage and identify those that indicated or referred to behaviors or attributes which would contribute to or obviously did affect combat effectiveness of the individual soldier.
- (3) From the passages, derive concepts for potential CEVs on the bases of the following criteria:
 - (a) Frequency of mention or reference to,
 - (b) Amount of emphasis or feeling expressed by interviewees,
 - (c) Use in interviews to illustrate strong differences between more and less effective, or competent, personnel in combat.
- (4) Develop a rough list of relevant items which show promise as potential CEVs. The rough list consisted of 58 items representing concepts which showed promise as potential Combat Effectiveness Variables.
- (5) Using the rough list consisting of concepts, compare items on the list against the identified relevant passages. Develop meaningful names and operational definitions of the constructs, eliminating further redundancies.
- (6) Edit the resulting list to insure that each construct was face-valid, the constructs were close to exhaustive and were mutually exclusive. The products were 29 potential Combat Effectiveness Variables, each containing a name, a descriptor, and a brief passage which attempts to communicate the essence of the variables.

RESULTS

Products and deliverables of the project were:

- (1) Typed transcripts of all interviews, delivered to ARI under separate covers from this report, in the following volumes:
 - (a) *Interviews at Fort Benning*
 - (b) *Interviews at Fort Stewart*
 - (c) *Interviews in Kuwait*
- (2) Twenty-nine potential Combat Effectiveness Variables, each containing a title and a descriptor, which are face valid in this project and which are capable of further validation by Subject Matter Experts (SME). Each potential CEV is designed

Potential Combat Effectiveness Variables (CEV)

Following are the potential Combat Effectiveness Variables which resulted from the content analyses of protocols of interviews with combat experienced personnel. Each variable item shown here is accompanied by an operational definition and an interview excerpt selected to demonstrate the essence of the variable.

1. **Contributes to Teamwork -**

Demonstrates a willingness to cooperate and compromise; activities contribute to mission and welfare of the combat group or unit. Demonstrates willingness to sacrifice for welfare of group.

Excerpt:

"Everybody stuck together, it was like one big family." "You're a team; you can depend upon that person to cover your back."
"A bad team player wants to be the hero by himself; a good team player is everybody working to accomplish one mission, and not working against each other."

2. **Shows Motivation to Perform -**

Demonstrates task interest, task orientation, conscientiousness in work; demonstrates the ability to suppress personal impulses and to stay on task.

Excerpt:

"Some people just sit there and wait until you tell them to do something." "Others perform without orders; they see something and they start working on it, they don't wait for a supervisor." "He learns extra skills; he gets involved in things."

3. **Emphasizes Achievement -**

Demonstrates a desire to do job well, to meet standards of excellence, to advance one's career, to have their unit or team do a good job.

Excerpt:

"As we pulled out, we were leaving things that we shouldn't leave. At the last minute, as we were rolling out of the motor pool, and we were literally running through the motor pool and throwing things in the back of the trucks to make sure we had it all. But, uh, very strong self-starters took the initiative, seized the moment, and really made a strong accounting of themselves."

4. **Demonstrates Initiative -**

Performs without orders; takes personal initiative (without instruction or persuasion from others) to overcome obstacles or accomplish tasks; performs required tasks without orders.

Excerpt:

"I like to see a person who wants to work, or learn something. Wants to know his job, wants to know my job, and once they've learned their job, they can go ahead and step up, like the driver can step up and learn the gunner's job. People who are self-motivated." "I don't care what anybody else knows, I do it right. You, you've got to care."

5. **Shows Self Discipline -**

Demonstrates the tendency to stay on task and not give in to impulses under either stress, monotony, or fatigue.

Excerpt:

"...the bottom line was, the guy did the right thing, as soon as he was pullin' people out, applying life saving measures to those soldiers. Some medics arrived on the scene and he put his people back in the vehicle and took off to continue his mission. A pretty heroic guy, but it's certainly a sign of well-trained reactive leadership also."

6. **Displays Professionalism -**

Demonstrates a general attitude or philosophy that reflects a high value on professional conduct on and off the job. Shows the tendency to do a job well despite hardship, obstacles, personal problems, distractions, and danger.

Excerpt:

"We work together in teams; duty calls; gotta keep the mission going." "Someone, I think who is responsible in the sense that they wanta do well, not because somebody tells them this is your job, but because they feel it in theirself that they want to do that. You are thoroughbred horses, if you will; let 'em go out and run and do what they're supposed to do. A person in Special Forces is the true professional."

7. **Shows and Uses Mental Ability -**

Demonstrates intelligence, independence, and creativity to understand problems, shows potential for training.

Excerpt:

"A smaller army gotta be smarter." "Soldiers have to have 'common sense' that's a really big factor because you can get a genius off the street and out of high school and put him in here and he can't do it. That's because he doesn't have any relevance in this situation." I propose Private _____ as an example. I think if Private _____ pushed himself hard enough, he could probably fill any slot in the company, including Company Commander."

8. **Emotional Stability/Performs Under Stress -**

Works well under stress; stays on task despite large changes in consequences, large stimulus changes, environmental changes, long periods of danger; is able to perform duties and responsibilities under stress or long periods of monotony. Does not become emotional.

Excerpt:

"What really uh, what really kinda got everybody calmed down, is the guy who was my wing man, he sorta ... kept passing on the radio ... Hey, how's it going and how's everybody doing ... that sorta thing ... and then once we got goin' and uh, the whole company just kinda moved real fluidly, then Captain _____ was real calm on the radio ... and then we, we made some contact and blew a couple things up and, uh, that's when I really became calm and logical, and ya know because I got my confidence."

9. **Displays Personal Responsibility -**

Accepts responsibility for own actions, assume responsibility for assignments to themselves and subordinate personnel; values executing job assignments.

Excerpt:

"I don't care what anybody else knows, or what anybody else says, I do it right. And that's something that a lot of people are missin'. A lot of people say why do I need to do it right? Because it's right, there's no why to it. Why should I do this right, who's gonna care, who's gonna know, who's gonna care if I did right or if I did it wrong? You, you've got to care."

10. **Demonstrates Job Knowledge and Skills -**

Demonstrates effectively, knowledges and skills pertaining to all job-related tasks; demonstrates required information on military subjects; demonstrates knowledges and skills in the field, including use of weapons and vehicles, deployment, land navigation, and communication.

Excerpt:

"Private _____ was a good driver because, like I say, he knows the Bradley. Um, he even knew exactly when that track was broke. He was a natural with a tank."

11. **Shows Confidence to Perform in Combat -**

Demonstrates confidence in their ability to perform effectively in combat. Does not reflect ignorance or foolhardiness; has genuine confidence in their ability to do their job in combat.

Excerpt:

"....Two hundred and fifty miles in enemy territory, this guy flew that helicopter ten feet off the ground, just as fast as he could get there to come and get us. Came there, snatched us out of the jaws of death, and brought us back home. Everyone, not a scratch. The chopper got shot up, but no personnel were hurt. You don't find them every day."

12. **Communicates Well -**

Skilled in sending content information about who, what, when and how; is articulate, specific, and relevant, and communicates in a form that receivers can understand and use. Shows ability to process feedback from receiving personnel. Demonstrates an understanding of consequences of the information communicated to receivers.

Exert:

"This lieutenant, you always understood what he wanted. He was very clear talking to us. This area right here was a high stress area, right? Well, he did not initiate hollerin' with hard men like these. When he talked to somebody, he talked to them in a kind way. If he told em something, he never acted like he was mad. He just tell em what they need to do and they do it right."

13. **Demonstrates Social Maturity -**

Shows fairness, wisdom, cooperation, and loyalty to other personnel. Is not overly self-serving; yet watches out for welfare of self and shows concern for others.

Excerpt:

"I say, you have to be able to get along. If you get somebody that's a loner and they don't like to get along with people, they're most like won't wanta excel in what they do. Soldiers don't like being treated like a kid. Quote to live by, 'You treat them like men, and they will act like men.'"

14. **Competitive -**

Actions indicate desire to surpass performance standards, surpass the performance of other personnel, and for unit to surpass goals and performance requirements.

Excerpt:

"That sergeant was the most competitive person I ever saw. I don't care what it was -- whether it was physical training or weapons drill, or military knowledge, or what. He wanted to be the best and he wanted our outfit to be the best. In training, he'd check the training results every day to see where our unit stood against others, and when we got to the desert, he was a wild man. But the thing is, he was the best combat soldier I ever saw."

15. **Masters Job Tasks (Ability to learn to perform job requirements) -**

Performs adequately, under combat conditions, all tasks related to the requirements of their job (Quantity and quality of job well-done).

Excerpt:

"We had a private, he knew how to disassemble every weapon that he would come into contact with, and he knew how to pull immediate action on it, he had been in there in the past. He just ... every chance he got he sought out an opportunity to get better at his job. But he was cocky. It wasn't that he wanted everyone to know how sharp he was ... I don't think he cared about that ... but what he really did care about was makin' sure people above him knew what they were doin'. Uh, he was tough as nails. I mean just fiercely competitive. He pushed the guys, that were E1 to E3 and even Specialist as far as they would go."

16. **Solves Job Related Problems -**

Finds solutions to problems that are job related. Finds solutions to problems with the resources at hand. Ability to deal with daily job problems.

Excerpt:

"Ya know, all I'd say ... 'I need somebody that can do this' ... and they'd figure it out." "I think the best ones that I've had are the ones that are, got common sense, and know, sort of the book part also, because they don't try to look at things and try to do it the easy way, but they're also smart enough to know that if you don't do it right, it's not going to work properly."

17. **Adaptability -**

Adapts readily to difficult or changing conditions or situations. Shows flexibility in approaching problems, finding solutions, and handling personnel.

Excerpt:

"You can't let your guard down, you can't totally slip because you never know what's gonna happen and that's where the flexibility part of it comes in. And if something comes up, you have to jump from one task and get on to another task and be able to do it. And then go back to the other task you were doin' and just whatever comes up." "He can handle himself in any situation that comes up." "He should adapt to different environments."

18. **Learns Spontaneously -**

Learns from experience. Learns and improves performance during job experience. Works out new methods and procedures. Improvises when necessary.

Excerpt:

"A lot of soldiers came up with great ideas, uh case in point the young sergeants that we had on our contact teams, and the young soldiers on our contact fabricated ballistic shields for our TC, our tank commander hatches; they fabricated cargo racks for our 1-1-3s so we could carry a lot of stuff on the outside of the vehicles. That wasn't done by officers. That was done by those E5s, E6s, E4s."

19. **Tenacious Under Stress -**

Continues working and staying with assignments under stressful conditions. Focuses on task and task requirements under highly stressful conditions and continues to completion.

Excerpt:

"The Captain was real calm on the radio. He said, 'I got hostile.' Instead of stopping at a dismount, we just kinda go around him, and things just started clickin. I don't know how it happened when, we were really close and then we, we made some contact and blew a couple of things up."

20. **Is Patient -**

Tolerates waiting, lack of information, faulty schedules, and delay.

Excerpt:

"It's like being in prison; breaks down a soldier's morale; waiting around, we didn't know what was going on." "You'd go up and you'd get, you'd put yourself in a high position and you'd sit there for five days and if you, like in some places, there was triple canopy, well, you were over there, there's triple canopy and we'd tie ourselves in ... for five bloody days (Viet Nam)."

21. **Tolerates Monotony -**

Tolerates lack of structure, boredom, lack of knowing future, and lack of excitement.

Excerpt:

"You got to have somebody who can sit there and just sit and be still for two or three hours. You've got to be able to go inside yourself and just shut down." "You could report to a FAC pilot, once every three days, or once every two days. Um, and things don't change, faces change, names change, techniques may change a little, most of 'em don't change; perseverance, endurance, patience, perceptiveness, uh, and controlling one's emotions, extremely important for those kinds of operations."

22. **Takes Pride In Self -**

Does a quality job for their own satisfaction; takes pride in own performance.

Excerpt:

"You will see a soldier that can perform in the absence of an order. In other words, if you were walking around with me, you would know I didn't give him that order, but yet you see the uh, the engine portion of that M113, that latches up, and that individual is down there and doing some things getting his or her vehicles squared away."

23. **Has Mental Strength -**

Handles themselves in any situation that arises. Under stress or emotion, is calm, cool, professional; checks and rechecks, takes care of self and other personnel.

Excerpt:

"My wounded guy, the lieutenant, the first guy that treated him was a combat life saver. Uh, the wounded guy that had burns on the face, first guy that treated him was a combat life saver. In my own unit in their own section, a fellow soldier taking care of another soldier. Another kid got it in the throat with a strap that was holdin' a warp a little bit let loose. The kid stopped breathing and a combat life saver guy was a guy of the same station, stabilized and restored his breathing and the medic came over and called the medevac and took the kid away."

24. **Works Well With Others Under Stress -**

Follows instructions; "goes along"; tends to be agreeable; under stress, works with others toward a common goal and outcome; helps others.

Excerpt:

"You can't go clear a bunker by yourself. I mean, I'm sure that everyone on this team sort of, we sort of like each other, in most cases, unless they start doin' stupid stuff like that. But uh, ya know, you also gotta learn that if you get stuck in a team with someone that you don't like, okay, don't like 'em when you're not workin. But when you gotta work with them, you gotta work with them, that's just it."

25. **Maintains Good Physical Conditioning -**

Maintains self in good physical condition; works independently of unit requirements for physical conditioning.

Excerpt:

"This sergeant stayed in shape all the time, no matter what. I liked that because once the action starts, everybody busts their ass. I like to work with people who work hard, and can handle it."

26. **Sustains Performance -**

Maintains or continues performance above and beyond minimal or optimal requirements; sustains performance as long as situation requires or until relieved.

Excerpt:

"Some men just go out there and do it. Then, they keep on doing it. Their activity level is extra effort beyond the call of duty. But some of 'em, regardless of what, they just grit their teeth and keep on plugging, until its over."

27. **Is Dependable -**

Does what they say they will do or is ordered or instructed to do; fulfills commitments; is punctual.

Excerpt:

"Do what you say you're going to do." "... like we're all soldiers here and our job is to go to combat whenever we're called upon." "... Got to be able to do his part ... I'd like to see a person, who wants to work or learn something ... and once they've learned their job, they can go ahead and be counted on to do what they're supposed to do."

28. **Is Dedicated -**

Follows instructions regardless, because it is part of their job; attacks apparent problems even without instructions. Dedicated to Army, their unit, and their mission.

Excerpt:

"Heart, guts." "... To me, it seemed like, if I had to go out there and I had to fight for what's mine -- my country. Ya know, I'd give it everything I had, ya know, if I'd die, that was it. What I, at least uh, I was fighting for something that I believed in. And that, sooner or later, it would be mine."

29. **Is Resourceful -**

Finds novel, improbable solutions to problems, with resources at hand. Copes with rare events for which there may have been little training.

Excerpt:

"Well, I had a couple of guys. He came up with an idea, ya know. They had latrines. Right, portable Johns? And, we had one in the company, way down there. And we got the tent, medium size that had big boxes. He came over there and said hey, why don't we build a [toilet] out of these big boxes? Man, go ahead. He went ahead and built one, ya know, I'm sayin it came out pretty good."

"Instantly, people took care of people. I mean, even with stuff still exploding, they went in and pulled people out, and it wasn't one of those things of lookin' around and tryin' to figure out who's gonna do what. Guys reacted and did their thing. About the only thing they were uncertain about, was how they were gonna get to where they were gonna land the helicopter to evac the guy."

DISCUSSION

The content analysis discussed earlier, with refinement, resulted in 29 potential combat effectiveness variables (CEV). It is the conviction of the Continental Systems research team that the 29 performances, behaviors, or attributes possess the greatest potentialities for becoming valid and useful variables for assessing an individual's combat effectiveness.

The potential CEVs are:

- (1) Comprehensive -- they are applicable to all jobs or MOS's and apply throughout the Army;
- (2) Somewhat mutually exclusive -- There is some overlap between some CEVs. It seemed virtually impossible, at this early developmental stage, to exclude all overlap. Further refinement may be possible with additional research.

- (3) Face valid -- There should be little question that the 29 CEVs possess face validity within the military context. The names of the CEVs are familiar and meaningful in a military context, they imply performance, and each description delineates actions or performances that are believed to contribute to combat effectiveness.

The 29 CEVs were derived on the bases of (1) frequency of mention or reference to, (2) amount of emphasis, or feeling, expressed by interviewees; or, (3) use in interviews to illustrate strong differences between more and less effective, or competent, personnel in combat.

Thus, the result was 29 *potential* Combat Effectiveness Variables (CEV). Throughout, "potential" is the operative term. The 29 CEVs are deemed to be potential variables that, after further validation, may well serve as combat effectiveness criteria.

The potential CEVs derived herein are deemed to possess face validity, based upon the judgments of three Subject Matter Experts. Here, "face validity" means the potential CEVs make sense and, on the surface, seem to be reasonable in a military context. However, before full confidence can be placed in the utility of the CEVs, they should be validated further.

CONCLUSION

There are numerous methods by which the CEVs can be validated. However, the simplest and most straightforward procedure appears to be to obtain scaled ratings of each potential CEV by carefully selected combat experienced, subject-matter experts (SME).

With proper sampling and selection of SMEs, it should be possible to obtain valid ratings of the CEVs, with a cross validation to confirm the ratings, and a set of CEVs in which considerable confidence can be placed.

REFERENCES

- White, R.A., Olmstead, J.A., Malone, M.D., and Thompson, T.J. *Measurement of Combat Performance*; Continental Systems Technology Corp.
Final Report; Army Research Institute for the Behavioral and Social Sciences, 1993.